Valentina Garcia and Lindsay Osso
Engineering Life iBiology Course
May 29th 2015

Drug Delivery Technology

Robert Langer

Part I: Overview

1. Why is drug delivery design an important field?
2. What was your favorite drug delivery method described?
3. What are some of the remaining issues with these drug delivery methods?

Part II: Past and Future

1. What are angiogenesis inhibitors? How were they originally identified?
    a. How would a biological assay or screen for angiogenesis inhibitors differ today from Langer's assay?

Part III: Biomaterials for Drug Delivery and Tissue Engineering

1. Why is polyester not an appropriate polymer for drug delivery?

Overall:

1. What factors must be taken into account for the creation of a given drug delivery system? Are there any factors that apply universally to drugs or are they largely target specific?
2. How could other bioengineering technologies be incorporated to improve delivery?
3. Choose a disease and design an ideal drug delivery system to treat it.
4. Compare and contrast drug delivery via DNA cages vs. polymers. What are some advantages and disadvantages of each?

Paper and Part II:

1. What drug delivery issue is this paper addressing?
2. What methods and technologies are they using to resolve them?
3. Explain Figure 2D.
4. What advantages does this technology have over others? What shortcomings still remain for this technology?
    a. Compare the device to an injection (Figure 5E).
5. Are there advances that need to be made to prepare this technology for human use? (scientifically, regulatory, ethical)
    a. In which situation would would a basal leakage be an insurmountable problem for use?
6. Discuss the technologies described in Langer's Part II lecture.
7. Think of other applications for this technology.

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Robert Bhisikul and Tejal Desai

1. What are the main issues with the current technique for drug delivery to the eye?
    a. Which properties do clinicians and patients want the drug to have?
2. Compare and contrast nanopores with the drug release technologies of Langer.
    a. Why don't Langer's matrix microspheres work in this case?
3. Which drug delivery system (nanopores or matrix) would deliver more consistent drug delivery rates? Why?